essary to use for rubber smoking the nuts of the Urucury palm, botanically known at *Attalea excelsa*.[1]

Of Rio de Janeiro it is said that a person who visited that city twenty-five years ago would hardly recognize the city to-day, and that "the traveler who was so unfortunate as to be obliged to stop there held to his nose a handkerchief saturated with disinfectant as he made his way through narrow, dirty, undrained streets" (p. 93). Such statements may make an effective background for references to the present healthfulness of that city, nevertheless, they are gross exaggerations. The statement (p. 93) that the people of Rio "learned from the United States how to make the city a pleasant healthful place to live in" is misleading to say the least. The fact that malaria was transmitted by mosquitoes was discovered by a surgeon in the British army. And as for Rio's beautiful Beiramar, we regret to say that there is no such a water front drive in the whole United States from which it could have been copied.

Both maps and text keep up the ancient myth about the forests of the Amazon valley being called *selvas* (pp. 105, 125). As a matter of fact they are called *mattas* by the people, and the forest map of Brazil by Dr. Gonzaga de Campos calls them *mattas*. But why must a foreign word be used at all? They are simply tropical forests.

But errors of statement that may be matters of oversight are of less importance than the attitude of teachers who think it necessary to use extravagant language in order to awaken the interest and to hold the attention of pupils. At page 123 we are informed that Indians have gathered the rubber, the sailors have manned the ships, and the workmen in the factories "have spent their time *in order that you may be protected from the wet.*" There is not a workman in that list who doesn't know better. And when attention flags, something more startling than usual must be injected into it. "Did you hear that loud report? Look at the column of smoke rising in the field over to the right" (p. 267). It turns out to be nothing more serious than the workmen blasting out the rocks in the nitrate fields. And though the nitrate regions of Chile are in low hills along the western margin of a flat ancient lake bed she says the "surface of the country is all upheaved" (p. 266), and gives a picture of waste rock from the quarries as evidence of the upheaval. Fictitious resemblances between the United States and Brazil are discovered (p. 78); while "Lying in its wide mouth, as the prey might lie in the open jaws of a great serpent, is the island of Marajo" (p. 104).

Some of this writing down to students is harmless enough, but one wonders why it is necessary to use a platitude instead of plain English; for example, coffee is called "our morning cup," and she "explores" the streets of Buenos Aires (p. 164). All of which is in keeping with certain other hackneyed expressions, such as: Bahia bay is "large enough to hold all the navies of the world" (p. 86); "every part of the animal, except the bleat and the bellow, is made use of" by the meat packers (p. 181). The pity of it all is that when the author forgets these antics and sticks to facts and to plain English she is an interesting writer, a fact which leads one to conclude that it is the system that is at fault rather than the author of the book.

There are legitimate ways to hold the attention of students, and there is a reasonable mean between buffoonery and the dry-as-dust way of presenting instruction. The idea that studies must be made entertaining has so penetrated our schools, our teachers, and our text-books, that the seriousness of education is well nigh lost sight of in the sensationalism, extravagance, and unwholesome lack of sincerity that naturally springs from such false conceptions.

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[1] Wallace's "Palm Trees of the Amazon," p. 118.

PATENT REFORM PROSPECTS

THE following letter is published for the information and suggestions it contains:

PATENT OFFICE, WASHINGTON, D. C.,
July 29, 1917.

MR. F. F. WITHROW, AND OTHERS,
Patent Office, Dept. of Agriculture,
Ottawa, Canada.

Gentlemen: Below is submitted a general response to your valued letter of inquiry dated July 4, 1918. You may find it largely an extenuation of present comparative inaction.

The first definite steps toward the founding of our society were, in point of fact, taken by a group of assistant examiners more than a year since. Hon. Thos. Ewing, at that time commissioner of patents, lent some countenance to the movement, after ascertaining the favorable majority sentiment of the corps. The society and its work are still too undeveloped to justify much retrospect, but it is a matter of special gratification here that the membership has now been extended to include not only all chiefs of examining divisions, and the vast majority of assistant examiners, but also all chiefs of other divisions and all higher officials—thus including the present commissioner, Hon. J. T. Newton, First Assistant Commissioner Whitehead, and Assistant Commissioner Clay—whose paper reproduced in the *Scientific American Supplement* for January 9, 1918, is enclosed herewith.

Provision is made for associate membership on the part of those not members of the examining corps, the present fee being one dollar per annum; also for honorary membership, without fee. No honorary members have yet been elected.

The general objects of the society are perhaps best epitomized in the phrase "Devoted to the Improvement of the Patent System," which its stationery now bears. The society is of course interested in the promoting of mutual acquaintance within the office and with those who have business before it; in the elevating of standards of practise, information and efficiency; in the improvement of working conditions, methods and equipment; in better opportunities and incentives; in better organization and informative resources; and (by no means least) in meeting more than half way efforts toward patent reform on the part of any and all who may appreciate the predicament of the office and the possibilities and public importance of better patents and greater security therein.

In conformity with a resolution adopted by the Patent Office Society and fully concurred in by Commissioner Ewing while in office, the National Research Council, with expanding offices now at 1025 16th St. in this city, appointed, in 1917, a committee for the preliminary study of Patent Office problems. Under the chairmanship of Dr. Wm. F. Durand (now in France), several meetings of this committee were held, at two of which there were presented discussions arranged for by a special committee of the Patent Office Society—although responsibility for views expressed was, of course, entirely personal. The first paper presented as referred to was that of Mr. M. H. Coulston, at that time a law examiner (now chief clerk, and also president of our society), and it related to patent appeals. That paper, with slight changes by its author, our committee in charge of the forthcoming *Journal of the Patent Office Society* has decided to print in an early issue—moved thereto perhaps equally by the spirit in which it was prepared, by a subordinate in the "system," and by the intrinsic importance of its topic. Other discussions presented at the meetings referred to were as follows:

Procedure and conclusions of the President's Commission on Economy and Efficiency in their investigation of the Patent Office in 1914;
Needed legislation relating to assignments, or to the work of the assignment divisions;
The needs of the Patent Office library;
Suggested changes in the interference practise;
Proper soliciting and adequate searches;
The improvement of patent claims;
The need of a secondary classification of patents, based on industrial arts;
The essentials of a proper Patent Office building;
Incentives and opportunities within the Patent Office;
A proposed reorganization of the examining corps.

The mentioned committee of the N. R. C. (whose complete original membership, comprising some of the most noted of American scientists, engineers, inventors and authorities in patent law, was published in SCIENCE for December 26, 1917), is understood to have convened more recently at the New York offices of Mr. E. J. Prindle, the present chairman being Dr. L. H. Baekeland, of Yonkers, N. Y. Early enlargement of the committee was anticipated, and an additional committee of prominent engineers has in fact been appointed, under the chairmanship of Chas. A. Terry, E.E., by the United Engineering Societies, the last-named committee having authority to cooperate with the N. R. C., and others, in patent reform efforts.

As a consequence of the receipt of such information as the foregoing, and notwithstanding the fact that military and naval problems of the utmost urgency do seem to have foreclosed a first mortgage upon the *present* attention of all those men upon whom successful patent reform must depend, the "small beginnings" mentioned are still believed here to afford some promise of real prog-

ress; *c'est le premier pas qui coute!* And in this connection attention may be called to a heartening Executive Order of President Wilson's, dated May 11, 1918, which includes the following:

The National Research Council was organized in 1916 at the request of the President by the National Academy of Sciences, under its congressional charter, as a measure of national preparedness. The work accomplished by the council in organizing research and in securing cooperation of military and civilian agencies in the solution of military problems demonstrates its capacity for larger service. The National Academy of Sciences is therefore requested to perpetuate the National Research Council, the duties of which shall be as follows:

In general, to stimulate research in mathematical, physical and biological sciences, and in the application of these sciences to engineering, agriculture, medicine and other useful arts. . . .

To survey the larger possibilities of science, to formulate comprehensive projects of research, and to develop effective means of utilizing the scientific and technical resources of the country for dealing with these projects.

To promote cooperation in research, at home and abroad, in order to secure concentration of effort, minimize duplication, and stimulate progress; but in all cooperative undertakings to give encouragement to individual initiative, as fundamentally important to the advancement of science. . . .

The international character thus given to the National Research Council as a public, permanent institution will not escape notice. Are we not justified in feeling that we have hitched our wagon to the proper star? At any rate, obliged to live on corn meal and confidence, some of us especially value the latter!

The movement toward a Washington location for that great International Institute for the history of science proposed by Dr. George Sarton and others (and coveted as an associate by the Patent Office) also appears here to await a more favorable moment for public attention—although the resolutions upon this subject adopted by the Patent Office Society have already been strongly seconded by the Washington Academy of Sciences, and the American Society of Civil Engineers, as well as by several of the powerful scientific bodies local to this city. At a suitable moment, this project may be again pressed, although leadership therein is understood to devolve upon Dr. Sarton. . . .

How intrinsically absurd must appear the complete duplication, within each nation, of all those facilities and technical qualifications prerequisite to the proper determination of such purely *research* questions as operativeness, and novelty of conception! Surely the possible economy in search-costs alone must appeal more and more strongly not only to the inventors, who pay these particular bills, but to that increasing multitude now fortunately interested in the proposals looking toward a league of nations—or, at least, of democratic states! How much better the work of both could be done if the Canadian Patent Office and that of the United States could be coordinated at once, with united resources of men and means!

Salary resolutions, calling attention to the fact (ascertained by a questionnaire sanctioned by Commissioner Newton) that the great numbers of men annually leaving the office commonly double their incomes within three years; to the lack of satisfactory recruits, or of means for retaining properly qualified men; to the rapid consequent rate of resignation even for non-military employment; and to the corresponding jeopardy of inventor's rights entrusted to unqualified and inexperienced men, were duly approved by the executive committee of the Patent Office Society, but have been withheld from publicity—apparently because of misgivings lest shouting while cannon roar may be misunderstood—if it happens to be noticed at all!

Meager as they are, the assets of the society have proved sufficient to enable it—meeting as it does in the Patent Office Building—to purchase a projection apparatus adapted for motion pictures, of which notable use has already been made in showing the development and practise of particular arts; and also to tempt it, under the active leadership of President Coulston, into an essay at the publication of the mentioned *Journal*. For the first year, the price of this is fixed at $2.50, and its columns are intended to contain not only expositions of the present somewhat complicated practise, but also material deemed to deserve further consideration whenever the day for real patent reform shall dawn. These activities, for which some manuscripts are already at hand, may, of course, pave the way to a still wider field of usefulness: for in scientific and technical fields, as well as in legal, the possibility of suitable publication of historical studies must, of course, be accounted a legitimate incentive to study.

Possibly indeed any society centering in a government office must consider itself limited forever to an opportunist policy, making real advances, other than those of self improvement, only when the breath of a very genuine and generous official approval—undisturbed by the anxieties of a period of war—shall accord, during some constructive period, with a current of awakened public interest. Yet it is not without confidence that our society

now hoists its modest banner, believing that the administration of Secretary Lane under President Wilson affords a peculiarly favorable moment for the initiation of cooperative efforts of which the justification may be rational, rather than merely traditional. Obviously, those patent reform efforts which the National Research Council is understood to have deferred (in so far as they have been deferred) only by unavoidable necessity can reach the largest effects only as a result of a very comprehensive movement—in regard to which all interested and competent parties should be heard. And (if every other special qualification be disputed) who so well as examiners and assistant examiners can tell how distressing a thing it is for men charged with exhaustive research, and with judicial responsibilities therein, to be obliged to act hastily and superficially upon matters involving the largest public and private interests?

Lightly tossing a very broad challenge, one might ask—"Do not the prospects of democratic government, in competition with more centralized forms, ultimately depend on the capacity to initiate, to organize, to present and to utilize criticism. Within a republic, does not the duty of utterance devolve upon all who possess special information? But we now press only the more specific question: Is it not reasonably possible that manufacturers, investors, practitioners, jurists, publicists, scientists and engineers, as well as inventors of every field and grade, conferring under the coordinating influence of so disinterested and competent a body as the National Research Council, will, from this time forward, work more and more effectively to insure the *prompt* grant of *proper* patents—only; and to make the genuine inventor, the investor and the public alike really *secure* by a very clear and a very just definition of rights? Upon the determination of this one fundamental question we do urge an early test—before still more complete failure of the patent system shall bring it into utter contempt—even though in the execution of such a test we, the "proponents," may be able to undertake only a very subordinate part.

At least, we of the Patent Office Society hope we simplify the situation by inviting—for possible publication, and by no means in a spirit of challenge—criticism of any phase or feature of the present patent system. May we not soon hear again from yourselves?

Sincerely and fraternally,

BERT RUSSELL,
Secretary, Patent Office Society

SPECIAL ARTICLES

POLARIZATION IN CASE OF MOVING ELECTRODES

IN connection with other work, I incidentally came upon the following phenomenon which I have not found clearly stated anywhere; though from the enormous amount of work done on polarization, I can hardly suppose it to be new. In part it might be surmised from Hittorf's researches on the migrations of the ions.

In order to keep the resistance of the circuit constant, bright zinc electrodes, facing each other diametrically, and set tangentially to the arc of motion, were rotated around a vertical axis midway between, in an electrolyte of dilute brine. A small electromotor and pulleys, collector rings and brushes made up the remainder of the apparatus. Special care was taken that all parts of the circuit, except the free zinc surfaces to be tested, were thoroughly insulated; for the effects produced by splashing of liquid may be misleading and the brush contacts must be good.

The electrodes at practically the same potential were now charged by a single storage cell for 30 sec., the charging current being .16 am. for electrodes of about 26 sq. cm. each. On breaking, the polarization was naturally enormous (needle off scale); but it vanished rapidly in the well-known way, being counter to the charging current. When this polarization had fallen to about -0.010 volt, the electrodes were rotated. At once the polarization changed sign and was again enormous (needle off scale) and in its turn fell off in the usual way. When it had fallen to $+0.004$ volt the electrodes were stopped, leaving $+0.003$ volt, about.[1] Subsequent motion increased the electromotive force slightly in the direction of the charging current. In other words this second or residual polarization observed during the motion of the electrodes is astonishingly strong and *in the direction of the charging current.* To test this further, the latter was reversed many times, always reversing the phenomena as a whole, while in character they remained the

[1] Different experiments give different data, without changing the character of the values.